

INTERSTATE COMMERCE COMMISSION
WASHINGTON

REPORT NO. 3535
SOUTHERN RAILWAY COMPANY
IN RE ACCIDENT
AT KNOXVILLE, TENN., ON
OCTOBER 6, 1953

SUMMARY

Date: October 6, 1953

Railroad: Southern

Location: Knoxville, Tenn.

Kind of accident: Collision

Equipment involved: Passenger train : Yard loco- : Cut of 44
motive cars

Train number: 12 : :

Engine number: : Diesel- :
electric
unit 6505

Estimated speeds: Standing : Standing : Undetermined

Operation: Timetable and train orders; yard
limits

Tracks: Double; 9°15' curve, 0.27 percent
descending grade eastward

Weather: Clear

Time: 11:45 p. m.

Casualties: 1 killed; 3 injured

Cause: Cut of cars moving out of control
on descending grade as a result
of premature release of hand
brakes

INTERSTATE COMMERCE COMMISSION

REPORT NO. 3535

IN THE MATTER OF MAKING ACCIDENT INVESTIGATION REPORTS
UNDER THE ACCIDENT REPORTS ACT OF MAY 6, 1910.

SOUTHERN RAILWAY COMPANY

November 5, 1953

Accident at Knoxville, Tenn., on October 6, 1953, caused
by a cut of cars moving out of control on a descending
grade as a result of the premature release of hand
brakes.

REPORT OF THE COMMISSION¹

CLARKE, Commissioner:

On October 6, 1953, there was a collision between a
cut of cars moving out of control on a descending grade and
a yard locomotive on the Southern Railway at Knoxville,
Tenn., and derailed equipment struck a car of a passenger
train standing on an adjacent track. This accident
resulted in the death of one car-department employee, and
the injury of one passenger and two train-service employees.

1

Under authority of section 17 (2) of the Interstate Com-
merce Act the above-entitled proceeding was referred by the
Commission to Commissioner Clarke for consideration and
disposition.

1.03 percent descending
Coster

PROFILE
1.61 percent descending and 1.08 percent ascending
(average gradient 0.40 percent descending)

Varies between

Westward main track
Eastward main track

Oakwood tracks 1 2

1
2
3
4
5
6
7
8
Yard tracks

2,920 feet long

Clearance point

Auxiliary track
150 ft.

A
278 ft.

842 ft.

Derailed

P.S. Oakwood track

P.S. Auxiliary track

P.S. Eastward main track

304.51
390 ft.

P.S. Crossover

Crossover
205 feet

Out of cars
3,070 ft.

1.45
mi.

P.C.*

3 320 ft.

P.T.*

1,270 ft.

P.C.*

9 15'
1,000 ft.

P.S. Eastward main track

Point of accident

508 ft.

Auxiliary track

Yard loco. No. 18

Knoxville, Tenn.
(Point of accident)
2.3 mi.
Coster, Tenn.

Knoxville

Station track No. 1
Station track No. 2
Station track No. 3

Report No. 3535
Southern Railway
Knoxville, Tenn.
October 6, 1953

Location of Accident and Method of Operation

This accident occurred on that part of the Knoxville Division extending between Coster and Knoxville, Tenn., 2.3 miles. In the vicinity of the point of accident this is a double-track line, over which trains are operated by timetable and train orders. There is no block system in use. The current of traffic is to the right. Yard limits extend between, and include, Coster and Knoxville. Double track ends at a spring switch located 888 feet west of the station at Knoxville, and a single track which serves as a lead track extends eastward from this switch. It is connected with the west ends of the tracks which are designated from north to south, respectively, as station tracks Nos. 1, 2, and 3. The station tracks are tangent and parallel, and extend through the station. A crossover approximately 205 feet in length connects the lead track with station track No. 1. The west switch is facing-point for east-bound movements. The accident occurred on the turnout of the east switch of this crossover at a point 508 feet west of the station and 380 feet east of the switch at the end of double track. From the west on the eastward main track there are, in succession, a 3°45' curve to the left 390 feet in length, a tangent 740 feet, a 4° curve to the right 570 feet, a tangent 3,070 feet, a 3° curve to the right 320 feet, a tangent 1,270 feet, and a compound curve to the left, having a maximum curvature of 9°15', approximately 1,000 feet to the east switch of the crossover on which the accident occurred. Throughout a distance of 1.54 miles immediately west of the point of accident the grade for east-bound movements varies between 1.61 percent descending and 1.08 percent ascending, and averages 0.40 percent descending. At the point of accident the grade is 0.27 percent descending eastward,

At Coster, 2.3 miles west of Knoxville, yard tracks parallel the eastward main track on the south. These tracks are designated from north to south as Oakwood tracks No. 1 and No. 2 and yard tracks No. 1 to No. 8. Yard track No. 8 is 2,920 feet in length. The grade on this track is 1.03 percent descending eastward. A lead track connects the east ends of the yard tracks, the Oakwood tracks, and an auxiliary track with the eastward main track at a switch located 1.45 miles west of the point of accident. The clearance point at the east end of track No. 8 is 1,309 feet west of the switch in the eastward main track. All switches of the lead track are trailing-point for east-bound movements. A block-type derail was provided on the lead track. It was located 467 feet west of the switch in the eastward main track. The switches which connect with the Oakwood tracks and the auxiliary track are located in the lead track 150 feet and 278 feet, respectively, east of the derail.

The derail was of the sliding-block type. It consisted of a cast metal housing spiked to the ties on the gage side of the south rail of the lead track and a one-piece cast metal derailing block. The derailing block was of the right-hand type and was designed to deflect the wheels and cause the derailment of east-bound equipment moving over it. The housing acted as a bearing member and guide for the elongated portion of the derailing block when it was placed in derailing position or as it was retracted and removed from the top of the rail. An independent operating stand was provided. It was located on the south side of the south rail of the lead track and was connected to the throw mechanism of the derail by a connecting rod. Movement of the handle of the operating stand in one direction caused the derailing block to be placed on top of the rail in derailing position, and movement in the opposite direction caused it to be moved inward against the housing a sufficient distance to clear the wheels of equipment moving over the running rail.

This carrier's operating rules read in part as follows:

103(a). Cars standing on tracks must be properly secured * * *

1150. Cars left standing on any tracks must clear * * * other tracks * * *; hand brakes must be applied sufficient to hold them, and the wheels blocked if necessary; derailing devices where provided must be set to derail.

Description of Accident

No. 18, an east-bound first-class passenger train on the Chattanooga-Knoxville line of this division, arrived at Knoxville about 11:35 p. m., 5 minutes late. It was routed to station track No. 2 and stopped with the rear end in the vicinity of the station lead track which connects with the Coster Line. About 10 minutes later, while a yard locomotive was performing switching service at the rear of the train, the rear sleeping car was struck by derailed equipment of a cut of cars which had collided with the yard locomotive.

Diesel-electric unit 6505, assigned to yard service at Knoxville, moved westward on station track No. 2 immediately after the arrival of No. 18 and was coupled to a mail car at the rear of the train. When the mail car was detached from the train, a short reverse movement was made and the yard locomotive then proceeded eastward, pushing the mail car. It

was diverted through a crossover to station track No. 1 and stopped with the west end of the mail car about 353 feet west of the station. The mail car was then detached and the locomotive was moved westward, in backward motion, and stopped on the east switch of the crossover connecting with the Coster line at a point 508 feet west of the station. Immediately afterward it was struck by a cut of 44 cars moving eastward from the Coster line.

The crew of Diesel-electric unit 6072, assigned to yard service at Coster, assembled a cut of 44 cars on yard track No. 8. After the cars were assembled the locomotive proceeded to the east end of the yard and switching service was performed on an adjacent auxiliary track. About 15 minutes later, while the cut of cars on track No. 8 was being prepared for a transfer movement to Knoxville, the cars moved eastward toward the derail on the lead track. After several cars at the east end of the cut were derailed, the derail was broken. The derailed equipment was rerailed at trailing-point switches immediately east of the derail location. The cut of cars, moving out of control, trailed through the switch at the east end of the lead track, entered the eastward main track, passed the end of double track, was diverted from the station lead track to the crossover extending to station track No. 1, and while moving at a speed variously estimated at from 30 to 50 miles per hour it struck yard locomotive 6505 on the east crossover-switch.

The first nine cars at the east end of the cut of cars were derailed and stopped in various positions on or near station tracks No. 1 and No. 2 and an adjacent auxiliary track. The nineteenth car from the east end of the cut was derailed and stopped in line with the track. Yard locomotive 6505 was moved eastward a distance of about 165 feet by the force of the impact. It struck the mail car which had been left on station track No. 1 and moved it eastward. The rear truck of the locomotive was derailed. A sleeping car at the rear end of No. 18 was struck by derailed equipment. The first nine cars of the cut of cars, yard locomotive 6505, and the rear car of No. 18 were considerably damaged. The mail car on station track No. 1 was slightly damaged.

A car inspector was killed. The flagman of No. 18 and the fireman of yard locomotive 6505 were injured.

The weather was clear at the time of the accident, which occurred about 11:45 p. m.

Discussion

The rules of this carrier require that cars standing on tracks must be properly secured. When cars are left standing sufficient hand brakes must be applied to hold them and the wheels must be blocked if necessary.

On the day of the accident a yard crew at Coster assembled 20 cars on yard track No. 8 for movement to Knoxville. This crew went off duty at 3 p. m. Members of the crew said that the cars on this track had been moved several times during the day and on each occasion they observed that the hand brakes which had been applied were sufficient to hold the cars. A yard crew which came on duty at Coster at 3 p. m. continued to assemble cars on track No. 8 for a transfer movement to Knoxville. While this work was being performed the locomotive was at the west end of the yard. During the course of their work members of this crew placed an additional 24 cars on track No. 8. The yard brakeman who was working in the field said that hand brakes were applied on 5 or 6 of these cars as they were added to those on the track. There were 15 loaded and 29 empty cars, with a total weight of 1,506 tons, assembled for movement to Knoxville when work at the west end of the yard was completed soon after 11 p. m.

The locomotive then proceeded to the east end of the yard. The yard brakeman who was working in the field was left at the west end of the yard to prepare the cars on track No. 8 for the transfer movement, and the other members of the crew accompanied the locomotive. All members of the crew were aware that additional switching was to be performed at the east end of the yard before the locomotive would be coupled to the east end of the cars assembled on track No. 8. At the east end of the yard the locomotive entered an auxiliary track which diverges southward from the lead track. The yard brakeman left at the west end of the yard proceeded eastward on track No. 8, coupled air hose, and released hand brakes on the assembled cars to prepare the cut of cars for the movement to Knoxville. He said that when he had released all hand brakes to a point about five or six cars from the east end of the cut there was a slight movement of the cars, and the cut of cars began to move eastward. He immediately re-applied the last hand brake which he had released. He said that he applied the hand brakes on three or four other cars, and as the cut of cars continued to move he signaled for other members of the crew to assist him. After several cars became derailed he alighted from the car on which he was applying the hand brake before it reached the location of the derail.

The yard conductor said when he observed that the cars on track No. 8 were moving eastward and saw the signals being given by the yard brakeman he called a warning and gave stop signals to the members of the crew on his locomotive. He said he fell when he attempted to go to the assistance of the yard brakeman and the cars had passed when he reached the track over which they were moving. The engineer and the fireman alighted from the locomotive, but they were unable to render assistance because of the speed of the movement. They said they saw sparks flying from the wheels of several cars at the east end of the cut. The yard brakeman who accompanied the locomotive was lining switches in the vicinity of the lead track when he observed the cars moving eastward from track No. 8. He said the wheels of several cars at the east end of the cut appeared to be sliding as the cut moved toward the derail. He estimated that 10 cars became derailed as they passed over the derail.

After the mail car had been removed from the rear end of No. 18 and placed on station track No. 1, Diesel-electric unit 6505 was uncoupled from it. The Diesel-electric unit was then moved westward to make another crossover movement to pick up a sleeping car which was to be placed on the rear of No. 18. This sleeping car was on an auxiliary track located adjacent to the station. As the locomotive was approaching the crossover switch where the accident occurred the engineer and the fireman were in the cab of the locomotive and a yard brakeman was on the front footboard. Because of track curvature the view westward on the Coster line from a locomotive at this point is restricted to a distance of approximately 365 feet. The fireman said that when he observed the cut of cars approaching from the Coster line he called a warning. The locomotive was stopped before the collision occurred. The car inspector who was killed was in the vicinity of the west end of the sleeping car at the rear end of No. 18 when that car was struck by derailed equipment as a result of the collision on the adjacent track. Apparently he was struck by derailed equipment or debris which fell to the station platform.

About 20 minutes after the accident the equipment of the cut of cars which had moved eastward from Coster yard was inspected by a member of the mechanical force of the carrier. The hand brake of a flat car which was at the east end of the cut of cars was found applied, with the pawl engaged in the ratchet wheel of the brake shaft. The hand brakes of the other cars in the cut were inspected and none was found applied.

Small brake burns were found on the wheels of several of the cars which were at the east end of the cut. These apparently were the result of previous movements with the brakes applied.

Examination of the derail on the lead track at Coster disclosed that it was broken through the elongated portion of the derailing block. The fracture was all new and evidently resulted from the series of impacts received as the wheels of the cars passed over it. Marks on the track structure indicate that an undetermined number of cars were derailed before the derail was broken. These marks extended eastward from the derail location a distance of 278 feet to the heel of the switch point of the switch of the auxiliary track. The equipment which was derailed by the derail was rerailed as it passed over the switches of the tracks which converged into the lead track.

At Coster a sufficient number of hand brakes had been applied to hold the cars as they were assembled on yard track No. 8 for a transfer movement which was to be made later. If these hand brakes had not been released before the locomotive was coupled to the east end of the cut and the air brake system of the cars charged, this accident would have been averted.

Cause

It is found that this accident was caused by a cut of cars moving out of control on a descending grade as a result of the premature release of hand brakes.

Dated at Washington, D. C., this fifth day of November, 1953.

By the Commission, Commissioner Clarke.

(SEAL)

GEORGE W. LAIRD,
Secretary.